



# Installation & removal

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# Installation & removal



## *Two crucial points in the life of the bearing*

### *An intervention fraught with consequences*

*Bearing installation is an essential process which will determine the bearing's service life and ensure correct operation of your equipment.*

*In fact, incorrectly installed bearings will undergo rapid damage and affect your production facilities.*

*As a general rule for installation or removal, the bearing must be press-fitted on the turning element (the shaft or the bearing housing, depending on which one is turning).*

### *Nothing must "contaminate" the rolling elements*

*Cleanliness must also be a permanent concern. Any foreign body infiltration, either during installation, removal or storage, will cause rapid damage to the bearing.*

*Precautionary steps must also be taken when installing sealing elements. It is mandatory to lubricate the seal mating surfaces when fitting. A grease bead applied at the seal lip and at shaft feedthrough will help to improve the efficiency of the seal and limit the risks of damage.*

#### **INSTALLATION PRINCIPLES:**

- Check the bearing part number versus the drawings, specifications, procedures.
- Check that the dimensions and geometry of the mating surfaces and bearing journal positions correspond to the SNR drawings and specifications.
- Prepare all necessary equipment, parts, tools before beginning the installation process. Check their cleanliness.
- Carefully clean and check all parts and components in the bearing environment.
- Remove the bearing from its packing at the last moment, in a perfectly clean work zone.
- Never wash the bearing, unless otherwise specified. In fact, the bearing is protected against oxidation by a thin film of oil, compatible with all the lubricants used.
- Carry out bearing installation in accordance with the chosen method.
- Lubricate with special bearing grease, according to the instructions.
- After fitting and before final start-up, operate equipment without external loads applied and check correct operation in order to detect possible anomalies (noise, vibrations, overheating, abnormal axial or radial play, ...).

## Installation kit



Bearing installation is a critical operation, requiring suitable tools.

For correct fitting, force must always be applied to the bearing ring being fitted, on the shaft, or in the bearing housing, depending on the installation type.

The SNR installation tools will allow you to maintain the quality of the bearing races, seals and cages, by preventing damage due to the use of improperly sized fittings.

## Applications

- Bearing installation (bore diameter of 10-55 mm),
- Spacer ring installation,
- Pulley installation,
- Seal installation.

## Technical characteristics

The kit includes:

- **3 impact tubes**, well adapted for hand operation,
  - **1 set of 33 impact rings**, very hard wearing, covering an extensive range of dimensions,
  - **1 special hammer**, anti-bounce, shot-loaded, to ensure maximum impact.
- 
- A practical kit, easily transportable.

# Cold installation

## Installation kit

Tube P/Ns		Rings P/Ns		Matching bearing series and symbols					
		60 - 62 63 - 64	12 - 22 13 - 23	72 B 73 B	32 33	222-213 223	NU - NJ N	302 322	313 323
A 100199	10 - 26	6000	129		3200	–	–	–	–
	10 - 30	6200	1200 2200	–					
	10 - 35	6300	1300						
	12 - 28	6001			3201				
	12 - 32	6201	1201 2201	–		–	–	–	–
	12 - 37	6301	1301 2301						
	15 - 32	6002							
	15 - 35	6202	1202 2202	7202 B	3202				
	15 - 42	6302	1302 2302		3302	–	–	30302	–
	17 - 35	6003							
	17 - 40	6203	1203 2203	7203 B	3203			30203	
	17 - 47	6303	1303 2303	7303 B	3303	–	–	30303	–
B 100299	20 - 42	6004							
	20 - 47	6204	1204 2204	7204 B	3204		204		
	20 - 52	6304 6403	1304 2304	7304 B	3304	21304	304	30304	32304
	25 - 47	6005							
	25 - 52	6205	1205 2205	7205 B	3205	22205	205	30205	
	25 - 62	6305 6404	1305 2305	7305 B	3305	21305	305	30305	31305 32305
	30 - 55	6006							
	30 - 62	6206	1206 2206	7206 B	3206	22206	206	30206 32206	
C 100399	30 - 72	6306 6405	1306 2306	7306 B	3306	21306	306 405	30306	31306 32306
	35 - 62	6007							
	35 - 72	6207	1207 2207	7207 B	3207	22207	207	30207 32207	
	35 - 80	6307 6406	1307 2307	7307 B	3307	21307	307 406	30307	31307 32307
	40 - 68	6008							
	40 - 80	6208	1208 2208	7208 B	3208	22208	208	30208 32208	
	40 - 90	6308 6407	1308 2308	7308 B	3308	21308 22308	308 407	30308	31308 32308
	45 - 75	6009							
	45 - 85	6209	1209 2209	7209 B	3209	22209	209	30209 32209	
	45 - 100	6309 6408	1309 2309	7309 B	3309	21309 22309	309 408	30309	31309 32309
	50 - 80	6010							
	50 - 90	6210	1210 2210	7210 B	3210	22210	210	30210 32210	
	50 - 110	6310 6409	1310 2310	7310 B	3310	21310 22310	310 409	30310	31310 32310
For bearing installation into a housing (without shaft)									
C 100399	50 - 90	6011 6012	–	–	–	–	–	–	–
	45 - 100	6013 6211	1211 2211	7211 B	3211	22211	211	–	–
	50 - 110	6014	1212	7212 B	3212	22212	212		
		6015	1213	7213 B	3213	22213	213		
		6212	2212	7311 B	3311	21311	311		
		6213	2213			22311	410		
		6311	1311						
		6410	2311						

# Spanner wrenches



Solid, safe and simple to use, the 5 dimensions of SNR spanner wrenches available from the catalog can replace three times as many fixed conventional wrench models.

They facilitate tightening and removal operations for standard and precision nuts, while reducing the number of part numbers to be controlled and stored.

## Technical characteristics

- Size range: 15 to 180mm,
- Two types of wrenches available:
  - Castellated wrench, to tighten nuts with straight lots (or castellated nuts)
  - Pin wrench to tighten drilled nuts (e.g. precision nuts).  
Pins are heat-treated to 40 HRC Rockwell hardness.
- 5 sizes of castellated wrenches and/or pin wrenches in catalog:
  - 15 - 35 mm
  - 35 - 50 mm
  - 50 - 80 mm
  - 80 - 120 mm
  - 120 - 180 mm
- The hinge joint, incorporates a spring-washer that ensures smooth, reliable operation. Damage to the nut and the shaft is avoided.

# Cold installation

## Spanner wrenches

SNR precision nuts and slot wrench / pin wrench arrangement										
Wrench 15-35mm		Wrench 35-50mm		Wrench 50-80mm		Wrench 80-120mm		Wrench 120-180mm		
Slot	Pin	Slot	Pin	Slot	Pin	Slot	Pin	Slot	Pin	
B and TB type nuts	B 20/1	TB 20/1	B 25	TB 25	B 35	TB 35	B 60	TB 60	B 90	TB 90
	B 20/1,5	TB 20/1,5	B 30	TB 30	B 40	TB 40	B 65	TB 65	B 95	TB 95
	-	-	-	-	B 45	TB 45	B 70	TB 70	B 100	TB 100
	-	-	-	-	B 50	TB 50	B 75	TB 75	-	-
	-	-	-	-	B 55	TB 55	B 80	TB 80	-	-
	-	-	-	-	B 60	TB 60	B 85	TB 85	-	-
	-	-	-	-	-	-	B 90	TB 90	-	-
BP and TBP type nuts	-	-	BP 20/1	TBP 20/1	BP 30	TBP 30	BP 55	TBP 55	BP 75	TBP 75
	-	-	BP 20/1,5	TBP 20/1,5	BP 35	TBP 35	BP 60	TBP 60	BP 80	TBP 80
	-	-	BP 25	TBP 25	BP 40	TBP 40	BP 65	TBP 65	BP 85	TBP 85
	-	-	-	-	BP 45	TBP 45	BP 70	TBP 70	BP 90	TBP 90
	-	-	-	-	BP 50	TBP 50	-	-	BP 95	TBP 95
	-	-	-	-	-	-	-	-	BP 100	TBP 100
	-	-	-	-	-	-	-	-	-	-
BR and TBR type nuts	-	-	BR 25	TBR 25	BR 35	TBR 35	BR 60	TBR 60	BR 90	TBR 90
	-	-	BR 30	TBR 30	BR 40	TBR 40	BR 65	TBR 65	BR 95	TBR 95
	-	-	-	-	BR 45	TBR 45	BR 70	TBR 70	BR 100	TBR 100
	-	-	-	-	BR 50	TBR 50	BR 75	TBR 75	-	-
	-	-	-	-	BR 55	TBR 55	BR 80	TBR 80	-	-
	-	-	-	-	BR 60	TBR 60	BR 85	TBR 85	-	-
	-	-	-	-	-	-	BR 90	TBR 90	-	-
BPR and TBPR type nuts	-	-	BPR 20/1	TBPR 20/1	BPR 30	TBPR 30	BPR 55	TBPR 55	BPR 75	TBPR 75
	-	-	BPR 20/1,5	TBPR 20/1,5	BPR 35	TBPR 35	BPR 60	TBPR 60	BPR 80	TBPR 80
	-	-	BPR 25	TBPR 25	BPR 40	TBPR 40	BPR 65	TBPR 65	BPR 85	TBPR 85
	-	-	-	-	BPR 45	TBPR 45	BPR 70	TBPR 70	BPR 90	TBPR 90
	-	-	-	-	BPR 50	TBPR 50	-	-	BPR 95	TBPR 95
	-	-	-	-	-	-	-	-	BPR 100	TBPR 100
	-	-	-	-	-	-	-	-	-	-

KM lock nut and slot wrench arrangement				
Wrench 15-35mm	Wrench 35-50mm	Wrench 50-80mm	Wrench 80-120mm	Wrench 120-180mm
KM 0	KM 5	KM 7	KM 12	KM 18
KM 1	KM 6	KM 8	KM 13	KM 19
KM 2	-	KM 9	KM 14	KM 20
KM 3	-	KM 10	KM 15	KM 21
KM 4	-	KM 11	KM 16	KM 22
-	-	KM 12	KM 17	KM 23
-	-	-	KM 18	KML 24
-	-	-	-	KM 24
-	-	-	-	KM 25
-	-	-	-	KML 26
-	-	-	-	KM 26
-	-	-	-	KM 27
-	-	-	-	KML 28
-	-	-	-	KM 28
-	-	-	-	KML 30

## Adapter and withdrawal sleeves, hydraulic sleeve



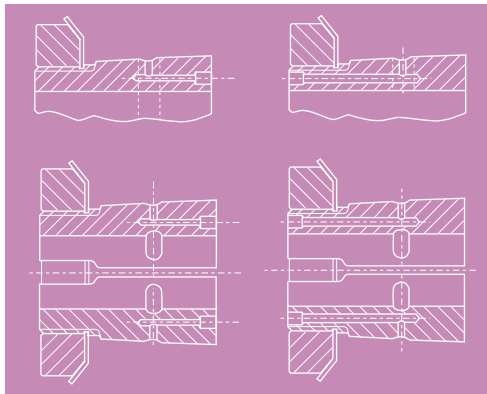
Adapter sleeves produce an interference fit between bearing and rotating shaft by pressing the bearing onto the sleeve. Withdrawal sleeves allow easy removal by simply screwing in the extraction nut (pushing the sleeve into the bearing bore). To facilitate large-size bearing installation and removal, SNR has also developed a range of hydraulic sleeves.

## Applications

### • Average size bearings:

- Sleeves permit tight fitting of taper bore bearings onto cylindrical shafts allowing larger shaft diameter tolerances. Bearing bore taper is generally 1/12. It is 1/30 for spherical roller bearings of Series 240.. and 241...
- Tolerances on shafts receiving sleeves:
  - Diameter tolerances: ISO quality 9 minimum.
  - Shape tolerances: ISO quality 5 minimum.

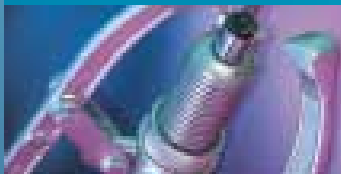
### • Large size bearings:



The SNR product range now includes hydraulic sleeves with distribution channels and slots permitting pressurized oil injection between bearing and sleeve, and between sleeve and shaft.

Oil reduces friction and avoids damage to the contact surfaces.

While considerably reducing bearing installation/removal times, this method also reduces equipment downtime.



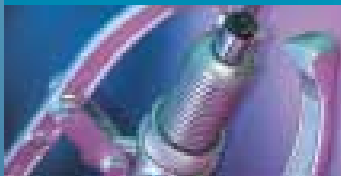
Adapter and withdrawal sleeves, hydraulic sleeve

Range of installation/withdrawal sleeves, nuts, washers, taper bore bearings (suffix K) and associated wrenches

BRG: Taper bore bearing (suffix K)  
WRE: Corresponding spanner wrench (see description, p. 35-36)  
S: Sleeve  
N: Nut  
W: Washer

INSTALLATION	Shaft	BRG	WRE	S	N	W	BRG	S	N	W	BRG			S	N	W	BRG	S	N	W	BRG	S	N	W	BRG									
	17	20	15/35	H204	KM4	MB4		H304	KM4	MB4	2204																							
	20	25	35/50	H205	KM5	MB5	1205	H305	KM5	MB5	1305	2205	21305	22205	H2305	KM5		MB5	2305															
	25	30	35/50	H206	KM6	MB6	1206	H306	KM6	MB6	1306	2206	21306	22206	H2306	KM6		MB6	2306															
	30	35	50/80	H207	KM7	MB7	1207	H307	KM7	MB7	1307	2207	21307	22207	H2307	KM7		MB7	2307															
	35	40	50/80	H208	KM8	MB8	1208	H308	KM8	MB8	1308	2208	21308	22208	H2308	KM8		MB8	2308	22308														
	40	45	50/80	H209	KM9	MB9	1209	H309	KM9	MB9	1309	2209	21309	22209	H2309	KM9		MB9	2309	22309														
	45	50	50/80	H210	KM10	MB10	1210	H310	KM10	MB10	1310	2210	21310	22210	H2310	KM10		MB10	2310	22310														
	50	55	50/80	H211	KM11	MB11	1211	H311	KM11	MB11	1311	2211	21311	22211	H2311	KM11		MB11	2311	22311														
	55	60	50/80	H212	KM12	MB12	1212	H312	KM12	MB12	1312	2212	21312	22212	H2312	KM12		MB12	2312	22312														
	60	65	80/120	H213	KM13	MB13	1213	H313	KM13	MB13		2213	21313	22213	H2313	KM13		MB13	2313	22313														
	60	70	80/120	H214	KM14	MB14	1214	H314	KM14	MB14			21314	22214	H2314	KM14		MB14		22314														
	65	75	80/120	H215	KM15	MB15	1215	H315	KM15	MB15	1315	2215	21315	22215	H2315	KM15		MB15	2315	22315														
	70	80	80/120	H216	KM16	MB16	1216	H316	KM16	MB16		2216	21316	22216	H2316	KM16		MB16		22316														
	75	85	80/120	H217	KM17	MB17	1217	H317	KM17	MB17	1317			21317	22217	H2317	KM17		MB17		22317													
	80	90	120/180	H218	KM18	MB18	1218	H318	KM18	MB18		2218	21318	22218	H2318	KM18		MB18	2318	22318														
	85	95	120/180	H219	KM19	MB19	1219	H319	KM19	MB19				22219	H2319	KM19		MB19		22319														
	90	100	120/180	H220	KM20	MB20	1220	H320	KM20	MB20	1320	2220		22220	H2320	KM20		MB20		22320	23220			H3120	KM20	MB20		23120						
	100	110	120/180	H222	KM22	MB22	1222	H322	KM22	MB22				22222	23022	H2322	KM22		MB22		22322	23222			H3122	KM22	MB22		23122					
	110	120	120/180												H2324	KM24		MB24		22324	23224	H3024	KML24	MBL24	23024	H3124	KM24	MB24	22224	23124				
	115	130	120/180												H2326	KM26		MB26		22326	23226	H3026	KML26	MBL26	23026	H3126	KM26	MB26	22226	23126				
	125	140	120/180												H2328	KM28		MB28		22328	23228	H3028	KML28	MBL28	23028	H3128	KM28	MB28	22228	23128				
	135	150	120/180												H2330	KM30		MB30		22330	23230	H3030	KML30	MBL30	23030	H3130	KM30	MB30	22230	23130				
	140	160													H2332	KM32		MB32		22332	23232	H3032	KML32	MBL32	23032	H3132	KM32	MB32	22232	23132				
	150	170													H2334	KM34		MB34		22334	23234	H3034	KML34	MBL34	23034	H3134	KM34	MB34	22234	23134				
	160	180													H2336	KM36		MB36		22336	23236	H3036	KML36	MBL36	23036	H3136	KM36	MB36	22236	23136				
	170	190													H2338	KM38		MB38		22338	23238	H3038	KML38	MBL38	23038	H3138	KM38	MB38	22238	23138				
	180	200													H2340	KM40		MB40		22340	23240	H3040	KML40	MBL40	23040	H3140	KM40	MB40	22240	23140				
	200	220													H2344H	HM44T		MB44		22344	23244	H3044H	HM3044	MS3044	23044	H3144	HM44T	MB44	22244	23144				
	220	240													H2348H	HM48T		MB48		22348	23248	H3048H	HM3048	MS3048	23048	H3148H	HM48T	MB48		23148				
	240	260													H2352H	HM52T		MB52			23252	H3052H	HM3052	MS3052	23052	H3152H	HM52T	MB52		23152				
	260	280													H2356H	HM56T		MB56		22356	23256	H3056H	HM3056	MS3056	23056	H3156H	HM56T	MB56		23156				
	280	300																				H3060H	HM3060	MS3060	23060	H3160H	HM3160	MS3160		23160	H3260H	HM3160	MS3160	23260
	300	320																				H3064H	HM3064	MS3064	23064	H3164H	HM3164	MS3164		23164				
	320	340																				H3068H	HM3068	MS3068	23068	H3168H	HM3168	MS3168		23168				
	340	360																				H3072H	HM3072	MS3072	23072	H3172H	HM3172	MS3172		23172				
	360	380																				H3076H	HM3076	MS3076	23076									
	380	400																				H3080H	HM3080	MS3080	23080									





Adapter and withdrawal sleeves, hydraulic sleeve

BRG: Taper bore bearing (suffix K)  
WRE: Corresponding spanner wrench (see description, p. 35-36)  
S: Sleeve  
N: Nut  
W: Washer

REMOVAL	Shaft BRG WRE			S	N	BRG		S	N	BRG	S	N	BRG		S	N	BRG		S	N	BRG		S	N	BRG		S	N	BRG			
	35	40	50/80	AH308	KM9	21308	22208			AH2308	KM9	22308																				
	40	45	50/80	AH309	KM10	21309	22209			AH2309	KM10	22309																				
	45	50	50/80	AHX310	KM11	21310	22210			AHX2310	KM11	22310																				
	50	55	50/80	AHX311	KM12	21311	22211			AHX2311	KM12	22311																				
	55	60	50/80	AHX312	KM13	21312	22212			AHX2312	KM13	22312																				
	60	65	80/120	AH313G	KM14	21313	22213			AH2313G	KM14	22313																				
	65	70	80/120	AH314G	KM15	21314	22214			AHX2314G	KM15	22314																				
	70	75	80/120	AH315	KM17	21315	22215			AHX2315G	KM16	22315																				
	75	80	80/120	AH316	KM18	21316	22216			AHX2316	KM18	22316																				
	80	85	80/120	AHX317	KM19	21317	22217			AHX2317	KM19	22317																				
	85	90	120/180	AHX318	KM20	21318	22218			AHX2318	KM20	22318							AHX3218	KM20	23218											
	90	95	120/180	AHX319	KM21		22219			AHX2319	KM21	22319																				
	95	100	120/180	AHX320	KM22		22220			AHX2320	KM22	22320				AHX3120	KM22	23120	AHX3220	KM22	23220											
	105	110	120/180							AHX2322G	KM24	22322				AHX3122	KM22	22222	23122	AHX3222G	KM24	23222						AH24122	KM23			
	115	120	120/180							AHX2324G	KM26	22324		AHX3024	KM26		23024	AHX3124	KM24	22224	23124	AHX3224G	KM26	23224		AH24024	KM25	24024	AH24124	KM26	24124	
	125	130	120/180							AHX2326G	KM28	22326		AHX3026	KM28		23026	AHX3126	KM26	22226	23126	AHX3226G	KM28	23226		AH24026	KM27	24026	AH24126	KM28	24126	
	135	140	120/180							AHX2328G	KM30	22328		AHX3028	KM30		23028	AHX3128	KM28	22228	23128	AHX3228G	KM30	23228		AH24028	KM29	24028	AH24128	KM30	24128	
	145	150	120/180							AHX2330G	KM32	22330		AHX3030	KM32		23030	AHX3130G	KM30	22230	23130	AHX3230G	KM32	23230		AH24030	KM31	24030	AH24130	KM32	24130	
	150	160								AH2332G	KM34	22332		AH3032	KM34		23032	AH3132G	KM32	22232	23132	AH3232G	KM34	23232		AH24032	KM34	24032	AH24132	KM34	24132	
	160	170								AH2334G	KM36	22334		AH3034	KM36		23034	AH3134G	KM34	22234	23134	AH3234G	KM36	23234		AH24034	KM36		AH24134	KM36	24134	
	170	180						AH2236G	KM38	22236	AH2336G	KM38	22336		AH3036	KM38		23036	AH3136G	KM36		23136	AH3236G	KM38	23236		AH24036	KM38	24036	AH24136	KM38	
	180	190						AH2238G	KM40	22238	AH2338G	KM40	22338		AH3038G	KM40		23038	AH3138G	KM38		23138	AH3238G	KM40	23238		AH24038	KM40	24038	AH24138	KM40	24138
	190	200						AH2240	HM44T	22240	AH2340	HM48T	22340		AH3040G	HM42T		23040	AH3140	KM40		23140	AH3240	HM44T	23240		AH24040	HM42T		AH24140	HM42T	24140
	200	220						AOH2244	HM48T	22244	AOH2344	HM52T	22344	23244	AOH3044G	HM46T		23044	AOH3144	HM48T		23144				AOH24044	HM46T	24044	AOH24144	HM46T	24144	
	220	240									AOH2348	HM56T		23248	AOH3048	HM52T		23048	AOH3148	HM52T		23148				AOH24048	HM50T	24048	AOH24148	HM52T	24148	
	240	260									AOH2352G	HM3160		23252	AOH3052	HM56T		23052	AOH3152G	HM56T		23152				AOH24052G	HM56T		AOH24152	HM56T	24152	
	260	280									AOH2356G	HM3164		23256	AOH3056	HM3060		23056	AOH3156G	HM3160		23156				AOH24056G	HM3160		AOH24156	HM3160		
	280	300													AOH3060	HM3064		23060	AOH3160G	HM3164		23160	AOH3260G	HM3164	23260	AOH24060G	HM3164	24060	AOH24160	HM3164		
	300	320													AOH3064G	HM3068		23064	AOH3164G	HM3168		23164							AOH24164	HM3168		
	320	340													AOH3068G	HM3072		23068	AOH3168G	HM3172		23168							AOH24168	HM3172		
	340	360													AOH3072G	HM3076		23072	AOH3172	HM3176		23172							AH24172	HM3176		
	360	380													AOH3076G	HM3080		23076														
	380	400													AOH3080G	HM3084		23080														

# Cold installation



## *Standard and precision nuts*



For bearing installation with sleeves, SNR proposes a full range of lock-nuts and lockwashers covering the market's needs.

## Standard nuts and lockwashers

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See table on pages 38 to 41.

## Applications

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### **For precision nuts:**

- Installing high precision or standard angular contact ball bearings,
- Installing tapered bearings,
- Installing combined needle bearings.

### Applications:

- To establish and maintain preload of a set of bearings.
- Cases of high precision bearing installation requiring the use of accessories to maintain the precision level of the assembly.
- To establish and maintain the axial position of a set of bearings, even if not preloaded, and more particularly in the case of high axial load applications.

## Technical characteristics

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### **For precision nuts:**

- Self-locking nut.
- The threads and the flat face of the nut (abutting the bearing) are machined concurrently. Therefore, high run-out precision is obtained: 0.005mm tolerance.
- Metric threads are used (as per ISO R/724 standard) with 5H tolerance (as per ISO 965/1 standard).



# Standard and precision nuts

## Precision nut range

### • Nuts type B and TB

Threads	P/N		Weight	Dimensions				Locking screw	Nuts		
D2	–	–	–	D1	L1	D3	M	Mbl	Far	Ma	Md
–	–	–	kg	mm	mm	mm	mm	N.m	kN	N.m	N.m
M20 x 1	B 20/1	TB 20/1	0,04	32	10	28	M5	4-5	140	18	39
M20 x 1,5	B 20/1,5	TB 20/1,5	0,04	32	10	28	M5	4-5	126	18	39
M25 x 1,5	B 25	TB 25	0,06	38	12	33	M5	4-5	198	25	56
M30 x 1,5	B 30	TB 30	0,08	45	12	40	M5	4-5	240	32	63
M35 x 1,5	B 35	TB 35	0,11	52	12	47	M5	4-5	263	40	72
M40 x 1,5	B 40	TB 40	0,15	58	14	52	M6	8-10	290	55	97
M45 x 1,5	B 45	TB 45	0,18	65	14	59	M6	8-10	322	65	115
M50 x 1,5	B 50	TB 50	0,20	70	14	64	M6	8-10	351	85	132
M55 x 2	B 55	TB 55	0,25	75	16	68	M8	16-18	378	95	148
M60 x 2	B 60	TB 60	0,27	80	16	73	M8	16-18	405	100	186
M65 x 2	B 65	TB 65	0,28	85	16	78	M8	16-18	431	120	196
M70 x 2	B 70	TB 70	0,38	92	18	85	M8	16-18	468	130	228
M75 x 2	B 75	TB 75	0,42	98	18	90	M8	16-18	497	150	255
M80 x 2	B 80	TB 80	0,49	105	18	95	M8	16-18	527	160	291
M85 x 2	B 85	TB 85	0,52	110	18	100	M8	16-18	558	190	315
M90 x 2	B 90	TB 90	0,75	120	20	110	M8	16-18	603	200	369
M95 x 2	B 95	TB 95	0,78	125	20	115	M8	16-18	637	220	391
M100 x 2	B 100	TB 100	0,82	130	20	120	M8	16-18	688	250	432

Far: Breaking axial load / Ma: Tightening couple / Md: Unlocking couple corresponding to the Ma indicated

Mbl: Max tightening couple recommended for screws / D1: Outer diameter / D3: Support face diameter / L1: Width

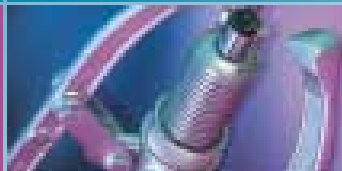
### • Nuts type BP and TBP

Threads	P/N		Weight	Dimensions				Locking screw	Nuts		
D2	–	–	–	D1	L1	D3	M	Mbl	Far	Ma	Md
–	–	–	kg	mm	mm	mm	mm	N.m	kN	N.m	N.m
M20 x 1	BP 20/1	TBP 20/1	0,12	38	20	28	M5	4-5	255	18	39
M20 x 1,5	BP 20/1,5	TBP 20/1,5	0,12	38	20	28	M5	4-5	225	18	39
M25 x 1,5	BP 25	TBP 25	0,17	45	20	33	M6	8-10	405	25	56
M30 x 1,5	BP 30	TBP 30	0,24	52	22	40	M6	8-10	491	32	63
M35 x 1,5	BP 35	TBP 35	0,28	58	22	47	M6	8-10	560	40	72
M40 x 1,5	BP 40	TBP 40	0,29	62	22	52	M8	16-18	585	55	97
M45 x 1,5	BP 45	TBP 45	0,37	68	24	59	M8	16-18	641	65	115
M50 x 1,5	BP 50	TBP 50	0,46	75	25	64	M8	16-18	706	85	132
M55 x 2	BP 55	TBP 55	0,92	88	32	68	M8	16-18	940	95	148
M60 x 2	BP 60	TBP 60	1,14	98	32	73	M8	16-18	1 070	100	186
M65 x 2	BP 65	TBP 65	1,29	105	32	78	M8	16-18	1 155	120	196
M70 x 2	BP 70	TBP 70	1,49	110	35	85	M8	16-18	1 230	130	228
M75 x 2	BP 75	TBP 75	2,25	125	38	90	M10	30-32	1 300	150	255
M80 x 2	BP 80	TBP 80	2,97	140	38	95	M10	30-32	1 420	160	291
M85 x 2	BP 85	TBP 85	3,44	150	38	100	M10	30-32	1 510	190	315
M90 x 2	BP 90	TBP 90	3,59	155	38	110	M10	30-32	1 596	200	369
M95 x 2	BP 95	TBP 95	3,73	160	38	115	M10	30-32	1 656	220	391
M100 x 2	BP 100	TBP 100	3,70	160	40	120	M10	30-32	1 780	250	432

Far: Breaking axial load / Ma: Tightening couple / Md: Unlocking couple corresponding to the Ma indicated

Mbl: Max tightening couple recommended for screws / D1: Outer diameter / D3: Support face diameter / L1: Width

# Cold installation



## Standard and precision nuts

### • Nuts type BR and TBR

Threads	P/N		Weight	Dimensions				Locking screw	Nuts		
D2	–	–	–	D1	L1	D3	M	Mbl	Far	Ma	Md
–	–	–	kg	mm	mm	mm	mm	N.m	kN	N.m	N.m
M25 x 1,5	BR 25	TBR 25	0,06	38	12	33	M5	3-4	198	25	85
M30 x 1,5	BR 30	TBR 30	0,08	45	12	40	M5	3-4	240	32	96
M35 x 1,5	BR 35	TBR 35	0,11	52	12	47	M5	3-4	263	40	107
M40 x 1,5	BR 40	TBR 40	0,15	58	14	52	M6	6-8	290	55	127
M45 x 1,5	BR 45	TBR 45	0,18	65	14	59	M6	6-8	322	65	149
M50 x 1,5	BR 50	TBR 50	0,20	70	14	64	M6	6-8	351	85	180
M55 x 2	BR 55	TBR 55	0,25	75	16	68	M8	12-14	378	95	206
M60 x 2	BR 60	TBR 60	0,27	80	16	73	M8	12-14	405	100	255
M65 x 2	BR 65	TBR 65	0,28	85	16	78	M8	12-14	431	120	277
M70 x 2	BR 70	TBR 70	0,38	92	18	85	M8	12-14	468	130	304
M75 x 2	BR 75	TBR 75	0,42	98	18	90	M8	12-14	497	150	357
M80 x 2	BR 80	TBR 80	0,49	105	18	95	M8	12-14	527	160	396
M85 x 2	BR 85	TBR 85	0,52	110	18	100	M8	12-14	558	190	444
M90 x 2	BR 90	TBR 90	0,75	120	20	110	M8	12-14	603	200	501
M95 x 2	BR 95	TBR 95	0,78	125	20	115	M8	12-14	637	220	550
M100 x 2	BR 100	TBR 100	0,82	130	20	120	M8	12-14	688	250	603

**Far:** Breaking axial load / **Ma:** Tightening couple / **Md:** Unlocking couple corresponding to the Ma indicated  
**Mbl:** Max tightening couple recommended for screws / **D1:** Outer diameter / **D3:** Support face diameter / **L1:** Widht

### • Nuts type BPR and TBPR

Threads	P/N		Weight	Dimensions				Locking screw	Nuts		
D2	–	–	–	D1	L1	D3	M	Mbl	Far	Ma	Md
–	–	–	kg	mm	mm	mm	mm	N.m	kN	N.m	N.m
M20 x 1	BPR 20/1	TBPR 20/1	0,12	38	20	28	M5	3-4	255	18	56
M20 x 1,5	BPR 20/1,5	TBPR 20/1,5	0,12	38	20	28	M5	3-4	225	18	56
M25 x 1,5	BPR 25	TBPR 25	0,17	45	20	33	M6	6-8	405	25	85
M30 x 1,5	BPR 30	TBPR 30	0,24	52	22	40	M6	6-8	491	32	96
M35 x 1,5	BPR 35	TBPR 35	0,28	58	22	47	M6	6-8	560	40	107
M40 x 1,5	BPR 40	TBPR 40	0,29	62	22	52	M8	12-14	585	55	127
M45 x 1,5	BPR 45	TBPR 45	0,37	68	24	59	M8	12-14	641	65	149
M50 x 1,5	BPR 50	TBPR 50	0,46	75	25	64	M8	12-14	706	85	180
M55 x 2	BPR 55	TBPR 55	0,92	88	32	68	M8	12-14	940	95	206
M60 x 2	BPR 60	TBPR 60	1,14	98	32	73	M8	12-14	1 070	100	255
M65 x 2	BPR 65	TBPR 65	1,29	105	32	78	M8	12-14	1 155	120	277
M70 x 2	BPR 70	TBPR 70	1,49	110	35	85	M8	12-14	1 230	130	304
M75 x 2	BPR 75	TBPR 75	2,25	125	38	90	M10	24-26	1 300	150	357
M80 x 2	BPR 80	TBPR 80	2,97	140	38	95	M10	24-26	1 420	160	396
M85 x 2	BPR 85	TBPR 85	3,44	150	38	100	M10	24-26	1 510	190	444
M90 x 2	BPR 90	TBPR 90	3,59	155	38	110	M10	24-26	1 596	200	501
M95 x 2	BPR 95	TBPR 95	3,73	160	38	115	M10	24-26	1 656	220	550
M100 x 2	BPR 100	TBPR 100	3,70	160	40	120	M10	24-26	1 780	250	603

**Far:** Breaking axial load / **Ma:** Tightening couple / **Md:** Unlocking couple corresponding to the Ma indicated  
**Mbl:** Max tightening couple recommended for screws / **D1:** Outer diameter / **D3:** Support face diameter / **L1:** Widht

## *Induction heaters*



Heat assisted installation consists of thermally expanding the bearing by raising the temperature, then sliding it onto the shaft without the need to apply force.

Contrary to oil bath, heating table or oven devices, the SNR induction heaters are safer and ensure a more exact procedure.

## Heating temperature depending on bearing bore

- Temperature should not exceed 130°C / 265°F in order to prevent altering of the characteristics of the steel or damage to the internal bearing components. Inner ring expansion (by temperature rise), facilitates bearing installation onto the shaft.
- Temperature must be adjusted according to dimensions, amount of interference fit and bearing journal material.
- Generally, the following temperature values can be applied:

Bore diameter	Heating temperature (max.)
Up to 100mm	90°C / 195°F
From 100 to 150mm	120°C / 250°F
Above 150mm	130°C / 265°F

# Heat assisted installation



## Induction heaters

### Advantages

#### • Easy to use

- Fewer handling operations, thanks to the pivot arm.
- Operator's safety: only the part to be heated undergoes high temperatures (easier handling, reduced risk of personal injury).
- Cleanliness: no oil, no waste, lower pollution of the bearings or components.
- Operating mode choice option: temperature mode / time mode.
- Automatic demagnetizing on completion of the cycle (less than 2A/cm loss).
- Bearings can be heated even when fitted with seals and greased.
- °C / °F switching.
- Easy maintenance.

#### • Heating control and safety

- Temperature control by integrated probe. The initial qualities of the bearing are maintained (no risk of exceeding the displayed temperature or eliminating the bearing radial internal clearance, etc).
- No risk of part overheating. By default, the device selects a temperature of 110°C / 230°F. However, you can manually select any temperatures from 50 to 240°C / 120 to 460°F.
- Magnetic probe insulation protecting the operator from burning his or her fingers.
- Compliance with EEC standards.

#### • Efficiency

- Turbo-boost: "Turbo-boost" technology is integrated in the SNR heaters. In horizontal position (resting on the polyamide base), the part is heated twice as rapidly (not recommended for low internal clearance bearings such as J20).
- Rapidity: It is no longer necessary to heat the same part several times to maintain the desired temperature. As soon as the part temperature drops 5°C / 9°F, heating restarts automatically and will repeat 5 times in sequence. This function is triggered automatically.

#### • Cost savings

- High efficiency, with a power factor of 0.8.
- Fast bearing heating, hence lower power consumption and extended device life.

#### Example:

##### Standard heater

Operating condition:

400 Volts, 30A, 0.23 power factor.

This delivers the following power:

$$P_{rms} = U \times i \times \cos \phi, \text{ i.e. } P_{rms} = 400 \times 30 \times 0.23 = 2.76\text{kVA}$$

Therefore, it draws 12 kVA and only delivers 2.76kVA.

##### SNR heater

Operating condition:

400 Volts, 30A, 0.8 power factor.

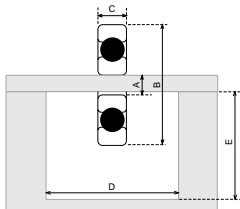
This delivers the following power:

$$P_{rms} = U \times i \times \cos \phi, \text{ i.e. } P_{rms} = 400 \times 30 \times 0.8 = 9.6\text{kVA}$$

Therefore, it draws 12kVA and delivers 9.6kVA.

# Induction heaters

## Fast Therm 20



A = Minimum bearing bore  
B = Maximum bearing diameter  
C = Maximum bearing width  
D = Distance between support points (width)  
E = Distance between support points (height)

Dimensions of the bars and other components						
Bars	A	B	C	Max. weight	Max. outer diameter with raiser 40 x 50 x 75mm	Max. width with raiser 40 x 50 x 75mm
14 x 14 x 200*	20mm	215mm	120mm	10kg	365mm	120mm
25 x 25 x 200*	35mm	225mm	120mm	15kg	375mm	120mm
40 x 40 x 200*	60mm	280mm	100mm	20kg	280mm	175mm (**)

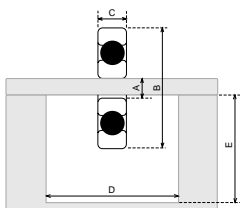
(\*): These bars are included in standard delivery with heaters.

(\*\*): Bearing in horizontal position on white base

The Fast Therm 20 device is delivered in a durable transport case

Technical information	
Voltage	110V - 230V / 110S - 230S
Frequency	50 - 60Hz
Power (kVA) / Maximum current	3.6 / 16A
Weight	17kg / 37lbs
Probe	Magnetic, insulated
Temperature mode	Max. 240°C / 460°F
Temperature hold	Yes
Time mode	No
Demagnetizing	Automatic
Pivot arm	No
Error signal / Display type	Yes / Digital
Distance between support points: height	100mm
Distance between support points: width	120mm
Device dimensions	345 x 200 x 240mm
Weight of the part to be heated	20kg / 45lbs.
Max. diameter of the part to be heated	280mm
Min. bore of the part to be heated	20mm

## Fast Therm 35



A = Minimum bearing bore  
B = Maximum bearing diameter  
C = Maximum bearing width  
D = Distance between support points (width)  
E = Distance between support points (height)

Dimensions of the bars and other components						
Bars	A	B	C	Max. weight	Max. outer diameter with raiser 50 x 50 x 120mm	Max. width with raiser 50 x 50 x 120mm
14 x 14 x 280	20mm	345mm	180mm	10kg	585mm	180mm
25 x 25 x 280	35mm	355mm	180mm	15kg	595mm	180mm
40 x 40 x 280	60mm	360mm	180mm	25kg	600mm	180mm
50 x 50 x 280	70mm	410mm	180mm	35kg	440mm	280mm (**)

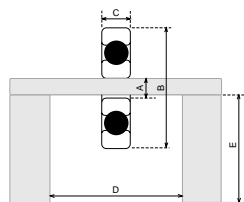
(\*\*): Bearing in horizontal position on white base

Technical information	
Voltage	110V - 230V / 110S - 230S
Frequency	50 - 60Hz
Power (kVA) / Maximum current	3.6 / 16A
Weight	31kg / 68lbs.
Probe	Magnetic, insulated
Temperature mode	Max. 240°C / 460°F
Temperature hold	Yes
Time mode	Max. 99.59min
Demagnetizing	Automatic
Pivot arm	Yes
Error signal / Display type	Yes / Digital
Distance between support points: height	160mm
Distance between support points: width	180mm
Device dimensions	420 x 260 x 360mm
Weight of the part to be heated	35kg / 77lbs.
Max. diameter of the part to be heated	410mm
Min. bore of the part to be heated	20mm

# Heat assisted installation

## Induction heaters

### Fast Therm 150



A = Minimum bearing bore  
B = Maximum bearing diameter  
C = Maximum bearing width  
D = Distance between support points (width)  
E = Distance between support points (height)

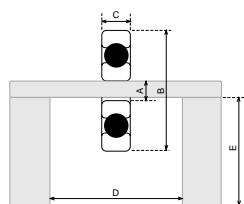
Dimensions of the bars and other components						
Bars	A	B	C	Max. weight	Max. outer diameter with raiser 70 x 70 x 150mm	Max. width with raiser 70 x 70 x 150mm
20 x 20 x 350	30mm	460mm	210mm	15kg	760mm	210mm
30 x 30 x 350	45mm	475mm	210mm	20kg	775mm	210mm
40 x 40 x 350	55mm	485mm	210mm	25kg	785mm	210mm
50 x 50 x 350	70mm	500mm	210mm	35kg	800mm	210mm
60 x 60 x 350	85mm	515mm	210mm	60kg	815mm	210mm
70 x 70 x 350	100mm	490mm	215mm	150kg*	490mm	365mm

(\*): Only in horizontal position

#### Technical information

Voltage	400V - 480V / 400S - 480S
Frequency	50 - 60Hz
Power (kVA) / Maximum current	12.8 / 32A
Weight	51kg / 111lbs.
Probe	Magnetic, insulated
Temperature mode	Max. 240°C / 460°F
Temperature hold	Yes
Time mode	Max. 99.59min
Demagnetizing	Automatic
Pivot arm	Yes
Error signal / Display type	Yes / Digital
Distance between support points: height	215mm
Distance between support points: width	210mm
Device dimensions	505 x 260 x 440mm
Weight of the part to be heated	150kg / 330lbs.
Max. diameter of the part to be heated	490mm
Min. bore of the part to be heated	30mm

### Fast Therm 300



A = Minimum bearing bore  
B = Maximum bearing diameter  
C = Maximum bearing width  
D = Distance between support points (width)  
E = Distance between support points (height)

Dimensions of the bars and other components of the device						
Bars	A	B	C	Max. weight	Max. outer diameter with raiser 80 x 80 x 150mm	Max. width with raiser 80 x 80 x 150mm
20 x 20 x 490	30mm	620mm	330mm	15kg	760mm	330mm
30 x 30 x 490	45mm	630mm	330mm	20kg	775mm	330mm
40 x 40 x 490	55mm	640mm	330mm	25kg	785mm	330mm
50 x 50 x 490	70mm	650mm	330mm	35kg	800mm	330mm
60 x 60 x 490	85mm	660mm	330mm	60kg	815mm	330mm
70 x 70 x 490	100mm	670mm	330mm	80kg	490mm	330mm
80 x 80 x 490	115mm	740mm	300mm	300kg*	740mm	450mm

(\*): Only in horizontal position

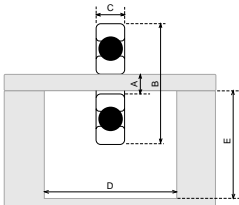
#### Technical information

Voltage	400V - 480V / 400S - 480S
Frequency	50 - 60 Hz
Power (kVA) / Maximum current	25.2 / 63A
Weight	91kg / 200lbs.
Probe	Magnetic, insulated
Temperature mode	Max. 240°C / 460°F
Temperature hold	Yes
Time mode	Max. 99.59min
Demagnetizing	Automatic
Pivot arm	Yes
Error signal / Display type	Yes / Digital
Distance between support points: height	300mm
Distance between support points: width	330mm
Device dimensions	Transportable: 700 x 500 x 980 Fixed: 700 x 500 x 580
Weight of the part to be heated	300kg / 660 lbs.
Max. diameter of the part to be heated	740mm
Min. bore of the part to be heated	30mm



# Induction heaters

## Fast Therm 600



A = Minimum bearing bore  
B = Maximum bearing diameter  
C = Maximum bearing width  
D = Distance between support points (width)  
E = Distance between support points (height)

### Technical information

Voltage	400V - 480V / 400S - 480S
Frequency	50 - 60Hz
Power (kVA) / Maximum current	25.2 / 63A
Weight	350kg / 770lbs.
Probe	Magnetic, insulated
Temperature mode	Max. 240°C / 460°F
Temperature hold	Yes
Time mode	Max. 99.59min
Demagnetizing	Automatic
Pivot arm	No
Error signal / Display type	Yes / Digital
Distance between support points: height	390mm
Distance between support points: width	410mm
Device dimensions	700 x 1,000 x 1,100mm
Weight of the part to be heated	600kg / 1320 lbs.
Max. diameter of the part to be heated	900mm
Min. bore of the part to be heated	45mm

### Dimensions of the bars and other components

Bars	A	B	C	Max. weight
30 x 30 x 700	45mm	830mm	420mm	600kg
40 x 40 x 700	55mm	840mm	420mm	600kg
50 x 50 x 700	70mm	850mm	420mm	600kg
60 x 60 x 700	85mm	860mm	420mm	600kg
70 x 70 x 700	100mm	870mm	420mm	600kg
80 x 80 x 700	115mm	880mm	420mm	600kg
90 x 90 x 700	130mm	890mm	420mm	600kg
100 x 100 x 700	145mm	900mm	420mm	600kg

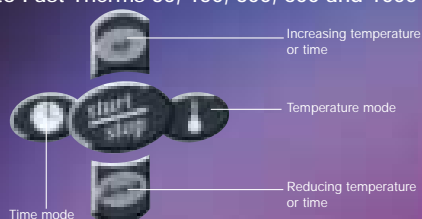
## Fast Therm 1000



### Technical information

Voltage	400V - 480V / 400S - 480S
Frequency	50 - 60Hz
Power (kVA) / Maximum current	40 / 100A
Weight	800kg / 1760lbs.
Probe	Magnetic, insulated
Temperature mode	Max. 240°C / 460°F
Temperature hold	Yes
Time mode	Max. 99.59min
Demagnetizing	Automatic
Pivot arm	No
Error signal / Display type	Yes / Digital
Distance between support points: height	500mm
Distance between support points: width	520mm
Device dimensions	600 x 1500 x 1,300mm
Weight of the part to be heated	1000 kg / 2,200 lbs.
Max. diameter of the part to be heated	1,150mm
Min. bore of the part to be heated	100mm

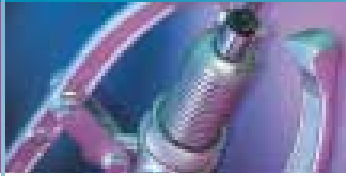
Control interface, common to Fast Therm 35, 150, 300, 600 and 1000



### Dimensions of the bars and other components

Bars	A	B	C	Max. weight
70 x 70 x 850	100mm	1070mm	500mm	1000kg
80 x 80 x 850	115mm	1080mm	500mm	1000kg
100 x 100 x 850	145mm	1100mm	500mm	1000kg
150 x 150 x 850	215mm	1150mm	500mm	1000kg

# Heat assisted installation



## *Heat-insulating gloves*



Designed to resist oil and heat, the SNR heat-insulating gloves are perfectly suitable for handling oily, hot bearings.

## Technical characteristics

- Made of KEVLAR®: the gloves include several fabric plies (ultra strong fibers).
- Tested and certified for EN 388 mechanical and EN 407 thermal risks, they meet extremely strict requirements:
  - Mechanical protection, EN 388: 244X
  - Thermal protection, EN 407: 4341XX

### NORMS EN 388

Descriptive	Norms
Abrasion	2
Cutting	4
Tearing	4
Piercing	X

### NORMS EN 407

Descriptive	Norms
Flammability	4
Contact heat	3
Convective heat	4
Radiant heat	1
S. Welded metal	X
P. Welded metal	X

Norms: from 1 (satisfactory) to 4 (optimum), X, non tested

## Advantages

- Resistance to temperatures up to 350°C / 660°F,
- Easy wear: provides comfort in all your maintenance tasks,
- Very high resistance to cuts, tears and abrasion,
- Non flammable: very high contact heat and convection heat protection (indices 3 and 4),
- Non-melting, lint-free,
- Size: 10.5,
- High protection: arm + hand (glove length: 35cm / 14 inches),
- Long time resistance to high temperature.

## *Hydraulic extractor*



Above a given bearing size, the use of a mechanical extractor for bearing removal is no longer suitable. SNR proposes a 10-metric ton hydraulic extractor. Therefore, with its integrated hydraulic pump, bearing removal is made much easier.

## Applications

- Removal of bearing assemblies (pulleys, gear bearings, etc.) or of tight-fitted inner rings,
- Removal of bearings either by the bore or by the outer diameter, by reversing the jaws.

## Technical characteristics

- Extractor, with a set of 2 or 3 interchangeable jaws,
- Heat-treated to provide heavy duty mechanical strength,
- Jaw extractor, offering 182mm range. Piston stroke: 55mm,
- Extraction force: 10 metric tons,
- Maximum jaw opening: 55 to 280mm (suitable for bearings and other parts of 55-280mm outer diameter),
- Light weight.

# Removal



## *Hydraulic extractor*

### Advantages

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- Very simple to use, due to the integral hydraulic pump: can be handled by one single operator,
- Durable pump,
- No energy losses,
- Removal safety: extractor equipped with EC standardized cover, to avoid any injury,
- Easily convertible between a 2- or 3-jaw extractor,
- Delivered in a rigid transport case (no risk of damage, easy transport),
- The extractor does not turn during bearing removal (an important feature, as a manual extractor requires a considerable torque in order to pull the bearing out).



The spindle of the mechanical extractor must turn, requiring the operator to apply a very high torque to pull out the part.



With the SNR hydraulic extractor, the operator only needs to actuate a pump. High power is obtained very simply.

### Operating tips

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- Always position the protection cover over the jaws when using the extractor.
- Take care not to damage the shaft or the bearing housing during the operation.